



"Niagara Rhodo"



Newsletter of the Niagara Chapter,
Rhododendron Society of Canada,
District 12, American Rhododendron Society

May 2019 Newsletter

Our Purpose: We are a non-profit organization whose aim is to promote, encourage and support interest in the genus *rhododendron*. Our goal is to encourage gardeners to grow and appreciate these plants, by providing educational meetings with knowledgeable speakers, access to topical publications and hosting joint meetings with other chapters.

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Word of Caution

By becoming a successful grower, the reader will be exposed to a contagion for which there is no cure. Once infected with an appreciation of rhododendrons and azaleas, most gardeners spend a lifetime collecting these most beautiful of all plants.

H. Edward Reiley

Visit Tom Laviolette's Gardens

Sunday, May 26, 2019, 10:30 A.M. for 11:00 A.M.

Pot Luck Picnic after the tour

Members of the Niagara Region Chapter of the Rhododendron Society of Canada have received a cordial invitation from **Tom and Sharon Laviolette** to attend a guided tour of their gardens and to participate in a pot luck picnic on their one-acre grounds. Included in this invitation is a guided tour of their daughter's neighbouring three-acre property, populated with some 100 azaleas and rhododendrons.

Both properties are located on Gregory Road, south of the QEW, on a bluff along the shores of 15-mile creek, conveniently close to the new 7th Street Louth exit on the QEW.

Development of Tom's rhododendron gardens dates back to the late 1990's some 20 years after our chapter was founded. Tom obtained many mature plants from Brian Schram who, with Al Smith and a few others, had been growing rhododendrons for several years before the Chapter's existence.

The one-acre site was originally populated with *Picea abies* (Norway Spruce) which, over the years of their growth, had deposited a layer of evergreen needles several inches deep. Open space among the trees contained grass. The basic soil was a lovely acidic sandy loam. Initially, each fall, Tom collected his neighbours' discarded oak leaves and simply deposited them on the open grass areas to decompose. He finally started to plant large, relatively mature rhododendrons into this composted "oak leaf+spruce-needle+sandy loam" soil. The shallow rooted heavy root balls were protected from wind by the "evergreen mini forest". The protection is such that Tom has been able to grow his



rhododendrons without fear of having them dislodged by severe winds, and allows him to grow various Cornus dogwoods, including Cornus Florida, and the west coast's Cornus Nuttallii (*above left*).



His collection of rhododendrons and azaleas include, among many others, Janet Blair (*right*), April Gem, Evening Sky, Boudoir, American Beauty (*Left*), Edith Bosley, Poukhanense. Corylopsis sinensis is found in one area. In another, a drift of exquisitely located Muscari armeniacum wend their way



thru the lawn on the edge of the bluff.

Pot Luck Picnic Planning

The Laviolette's home and grounds are particularly well suited for a pot luck early summer picnic. The spacious rear deck adjoining the main building together with the extensive rear lawn are conducive to chatting among participants. The interior is comfortable for setting up a buffet. The following suggestions have been developed by Tom and Sharon.

Please bring

Pot Luck Items to Share

- Appetizers
- Salads,
- Veggies (Cruautés)
- Desserts

Lawn Chairs: Are for pre meal or after meal visiting. Please drop them off in the back yard if we have a sunny warm day, otherwise keep them in your car!

Footwear

- Comfortable walking shoes through grass and gravel
- The entire meal will be served and eaten inside. Slippers or heavy socks are only for walking in the home
- Umbrellas will be handy if there is rain.

Arrival Time & Parking

The guided tour will start at 11 A.M. or such time as all expected participants are present. Don't be late. There's a lot of territory to cover. Tom's stories are not to be missed.

We suggest that participants plan to arrive at 10:30 A.M. to provide time to unload **Pot Luck Items** and to deliver them to Sharon in the kitchen.

The driveway into the property is narrow and parking space on the property is limited. Accordingly, for safety, convenience, ease of parking, and consideration of neighbours, all vehicles should be parked on 2nd Street Louth. A map and further information will be provided to those who inform Sharon that they will be present at the tour and picnic.

Please indicate your Intention to Participate as soon as possible

Please send an e-mail message to Sharon Laviolette at tomglaviolette@gmail.com before Thursday, May 16 to indicate **(a)** that you will be present and **(b)** what Pot Luck Item you will contribute to the buffet table. **NOTE:** Provision of Beer and wine are up to each participant's individual discretion. The meat component of the buffet will be provided by the Chapter.

Visit Tom Laviolette's Garden

Sunday, May 26, 2019

Garden Tour & Pot Luck Picnic

Open to Members, Niagara Region Chapter
Rhododendron Society of Canada



Advances in the Brueckner Project: Unexpected Participation

As has been reported in this Newsletter, the Brueckner Test project has been an important focus for many members of the Niagara Chapter and for other participants in several parts of Ontario, Quebec and Ohio for several years. Recently Christina Woodward organized various pieces of information relevant to the project's current status. With Addy Majewski's help she was able to post this information on the Chapter's web site at <http://www.rhodoniagara.org/projects/> . This link provides a brief but complete review of the project plus a listing with photographs of all the cultivars being tested, and a statement of the project's current status.

During the past winter, a student in the biology program at University of Toronto, Mississauga agreed to assess the current state of the cultivars under test at the Riverwood Conservancy. She did this to satisfy one mandatory element of the University's degree requirements. Nurulain Ibrahim completed the necessary observations of the hybrids' performance at Riverwood's grounds, prepared and delivered her report to a group in the University's biology Department. Her degree will be awarded at this spring's convocation. Nurulain Ibrahim's report is reproduced here.



Brueckner Hybrids Evaluation Study

Nurulain Ibrahim,
University of Toronto, Mississauga
April 8, 2019

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Rhododendron evaluation study

The purpose of the Brueckner Hybrid Test Project (BHTP) is to evaluate the horticultural merit of the Rhododendron Hybrids in northern gardens. There are several factors to assess, which are cold-hardiness, heat tolerance, bud hardiness, growth rate, disease resistance, flowering capacity and foliage retention (Rhododendron Society of Canada, Niagara Region, n.d.).

Since the internship placement occurred during the fall and winter season, which is the dormant period of the plants, I decided to focus on assessing the cold-hardiness of the Rhododendron hybrids in my evaluation study. There were two aims of my evaluation study; (1) to evaluate the cold-hardiness of the Rhododendron cultivars at TRC, (2) to categorize the Rhododendron cultivars by cold-hardiness level. The second aim was to aid future monitoring and evaluation process at TRC.

Cold-hardiness of Rhododendrons

Cold-hardiness can be described as the plant's ability survive through the winter season without injury (Graham and Mulin, 1976; Väinölä, 2000). Woody plants have adaptive mechanisms in response to a cold environment to prevent frost injury or desiccation caused by the cold wind. For a Rhododendron plant, this adaptive mechanism can be observed as leaf movements.

At very low temperatures, Rhododendron leaves curl (Harshberger, 1899) and droop (Nilsen, 1985). Leaf movements have several benefits to ensure the survival of the plant. First, by curling and drooping, the leaves are protected from the cold wind and the bright sun flecks. This prevents rapid changes of leaf temperature to occur (Havis, 1964; Bao and Nilsen 1988). Secondly, leaf movements also reduce the leaf surface area exposed to the sun. At dormant stages of the plant, plants are more at risk to photoinhibition if it receives direct heat radiation. Thus, leaf movements protect the chloroplast in the leaf's membrane from damage and prevent the reduction of photosynthetic capability during the following summer (Bao and Nilsen, 1988).

When the plants do get injured by the stressors of the winter environment, it can be observed by the browning of leaf tissues caused by leaf-necrosis (Väinölä, 2000).

Evaluation procedures

The type of study that I did here was an observational study, where I observed the effects of a winter or cold environment on 50 rhododendron cultivars planted at The Riverwood Conservancy (TRC)'s Chappel House garden. There were two types of data that were collected; environmental data and cold-hardiness data.

Environmental data

The environmental data consisted of variables such as temperature, soil pH, amount of light and site location. These data are required to create a site profile of Chappel House garden. This information will be useful for future comparative analysis whereby we can see how different environmental conditions would affect the plant's performance.

The temperature at Mississauga, ON during the winter season (from December 21, 2018 until March 19, 2019) were recorded based on the local data collected by The Weather Network. The soil pH was collected by using a soil 3-way meter. The amount of light at the site was measured by using Luxmeter, a light meter app for smartphone.

Cold-hardiness data

To evaluate the cold-hardiness of the cultivars, I observed whether the cultivars show leaf movements. I also visually observed the degree of leaf necrosis a cultivar had. Based on the study by Väinölä (2000), leaf injury is a good indicator of cold-hardiness of a rhododendron plant. I did this by assessing the whole plant and recorded them as having 'None', 'Marginal', 'Whole' leaf necrosis. For example, if more than 50% of the leaves on rhododendron cultivar have browning at the edges, I recorded it as 'Marginal' leaf necrosis.

The visual assessment method was the most appropriate method due to the limited measuring tools that are available at TRC. Moreover, this method can easily be done by future gardening volunteers that will be involved in the monitoring process.

Findings

The environmental data collected showed that in the winter season of 2018- 2019, the minimum temperature at Mississauga, ON was -21.5°C. The average soil pH across 4 quadrants of the garden was pH 6.7. The average amount of light was 6,100 Lux. Additionally, the rhododendron garden bed at the Chappel House garden was slanted facing the south-west direction. At the minimum temperature of 21.5°C, 85% of the cultivars were observed to have leaf movements as a response to the cold environment.

To address my second aim of the study, I categorized the Rhododendron cultivars based on the degree of leaf necrosis observed (refer to Table 1 and Table 2). The degree of leaf necrosis would indicate the level of cold-hardiness of the cultivars. 23 out of 49 cultivars were categorized in the first category (Figure 1).

1 cultivar was not included in the analysis because it couldn't be located in the garden.

Table 1. A categorical system to categorize the rhododendron cultivars based on the degree of leaf necrosis. Level 1 (Best) means the most cold-hardy, Level 2 (Moderate) means moderate cold-hardy, and Level 3 (Poor) means the least cold-hardy.

	Cold-hardiness level		
	1 Best	2 Moderate	3 Poor
Leaf necrosis	None	Marginal	Whole

Table 1. Table of rhododendron cultivars categorized by cold-hardiness levels.

1 BEST	2 MODERATE	3 POOR
XIV 29	I 45	XIV 13
XIV 11	VI 28	XIV 26
XIV 20	V 41	X 1
V 27	VI 30	VIII 77
XIII 35	XIV 23	II 29
XIV 19	I 39	VI 32
XI 10	IX 76	I 43
I 45(2)	IV 11	III 3
XIV 9	XII 14	XIV 39
IX 58		I 59
XIV 28		III 19 (1)
VIII 68		VII 11
VII 20		II 10 (I)
I 28		IV 22
VIII 69		III 20 (1)
XI 23		XIV 69
V 70		
IV 12		
XI 24		
XIII 35A		
III 20 (2)		
XIII 28		
VIII 76		

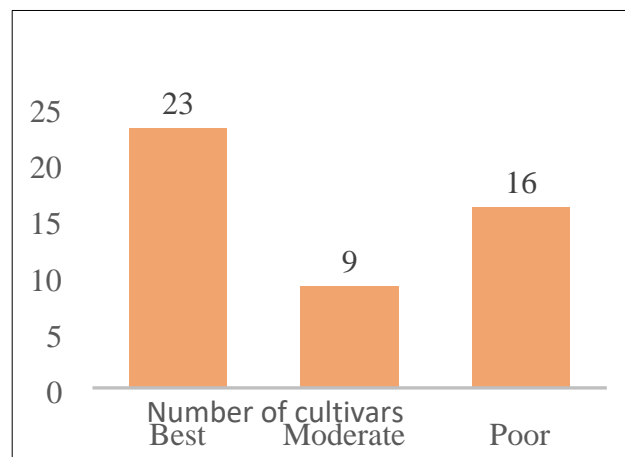


Figure 2. Number of rhododendron cultivars in each cold-hardiness category (Best, Moderate, Poor)

Recommendations and future directions

Based on a reference book on how to grow Rhododendrons in Ontario, Rhododendrons require acidic soil (pH 4.0 to 5.5) to grow well (Smith, n.d.). Additionally, a rhododendron garden site should be facing to the north or east to protect the plants from the westerly winds that is prevalent in southern Ontario. The plants should also have enough wind and sun shade from a nearby building or tall trees (Smith, n.d.). The minimum amount of light needed for rhododendrons to grow is 800 Lux (STEP Systems GmbH, 2016).

The environmental data collected indicated that the soil of the Rhododendron was above the recommended pH levels. Furthermore, the location of the garden is not ideal since it is facing west. The light environment at the garden is also high. Hence, a few recommendations to the planting and maintenance of the rhododendron garden are made:

- 1) Add sublimed sulfur or organic matter to reduce the soil pH to within pH 4.0 – 5.5.
- 2) Plant coniferous trees and shrubs around the garden to provide some wind and light shade to the rhododendrons.

Other than that, the list of cultivars under each category was created as shown in Table 2 above. This list would be helpful in the monitoring and determining the growth form and flowering performance of the cold-hardy cultivars. Attention should be given to the cultivars in the first category as they have observed to be cold-hardy. However, these preliminary data should be further built upon with the evaluation on growth form, flowering performance and cold hardiness for the next three years. The overall data at the conclusion of the 5-year period would allow a better and complete analysis. The variables that can be used to assess growth form and flowering performance are as follows;

a) Growth form:

- Plant height
- Leaf length
- Number of leaves on tagged branch

b) Flowering performance:

- Flower size & colour
- Truss length
- Number of flowers per truss

In conclusion, it is hoped that continuous evaluation of the rhododendrons will be done at TRC to have a complete data on the cold-hardiness, growth form and flowering performance. This will be necessary to determine which hybrids have the best horticultural merit and will be the most suitable at a northern garden. In addition to that, data sharing with the other institutions will allow for comparative analysis of the hybrids' performance at different locations.

References

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The author

"Nurulain Ibrahim came from Malaysia to Canada in 2015 to pursue her post-secondary education at the University of Toronto Mississauga (UTM). During an 8 month-long internship at The Riverwood Conservancy (TRC) in Mississauga, Nurulain assisted the education programs and did an independent study in which data were collected that are now part of the Niagara Test Project, designed to test some of Dr. Joseph Brueckner's *Rhododendron* hybrids. She was excited that she got to apply her Biology training in horticulture, which is a new field to her. With an interest in plant science, food security and the environment, she aspires to work in the agrobiotechnology industry. In her spare time, she likes to explore independent bookshops in Toronto."